

### 4.3.2. I/O Module Sizes

IOTA Sizing is nominal (6in = 152mm, 9in =228mm, 12in =304mm). I/O modules are associated with their respective IOTAs in the table below. The I/O Module is supported by one or more IOTAs. Below section also provides an overview of various available IO modules, IOTA, IOTA size and redundancy features.

I/O Module (Coated)	IOTA (Coated)	Description	Circuits	Size (in “)	Red.
8C-PAIH54		High-level AI HART, Differential	16		√
	8C-TAIDA1	AI IOTA		9	
	8C-TAIDB1	AI IOTA Redundant		12	√
8C-PAIHA1		High-level AI HART, Single-ended	16		√
8C-PAINA1		High-level AI w/o HART, Single-ended	16		√
8C-TAIXA1		AI IOTA	6		
8C-TAIXB1		AI IOTA Redundant	12	√	
8C-PAIMA1		Low-level AI – RTD & TC	16		
	8C-TAIMA1	Low-level AI IOTA		9	
8C-PAOHA1		Analog Output HART	16		√
8C-PAONA1		Analog Output w/o HART	16		√
8C-TAOXA1		AO IOTA	6		
8C-TAOXB1		AO IOTA Redundant	12	√	
8C-PDILA1		Digital Input 24V	32		√
8C-PDISA1		Digital Input Sequence of Events	32		√
8C-PDIPA1		Digital Input 24V Pulse Accumulation	32		√
8C-TDILA1		DI 24V IOTA	9		
8C-TDILB1		DI 24V IOTA Redundant	12	√	
8C-PDODA1		DO 24V Bussed Out	32		√
	8C-TDODA1	DO 24V Bussed IOTA		9	
	8C-TDODB1	DO 24V Bussed IOTA Redundant		12	√
	8C-SDOX01	DO Relay Extension <sup>1</sup>		15	√

Note 1- DO Relay Extension board is used along with DO IO module with IOTA (Redundant or non-redundant). Refer Section [4.4.11](#) for more details.

## 4.4. Specifications for Series 8 I/O

Specifications for Series 8 I/O modules are shown below.

### 4.4.1. Analog Input with HART - Differential

#### Function

Analog Input Module accepts high level current or voltage inputs from transmitters and sensing devices.

#### Notable Features

- Extensive self-diagnostics
- Optional redundancy
- Supports either Single Ended / Differential Inputs
- HART-capable, multivariable instruments and multiple modems for fast collection of control variables
- Fast loop scan

#### Detailed Specification- Analog Input with HART - (8C-PAIH54)

Parameter	Specification
Input / Output Module	8C-PAIH54 - Analog Input with HART (16), Coated
IOTA Modules	8C-TAIDA1      Non Redundant, Coated      9"
	8C-TAIDB1      Redundant, Coated      12"
Input Type	Voltage, Current (2-wire or self-powered transmitters), Single ended or Differential inputs
Input Channels <sup>1</sup>	16 Channels (All 16 Single Ended or Differential type)
A/D Converter Resolution	16 bits
Input Range <sup>1</sup>	0 to 5 V, 1 to 5 V, 0.4 to 2 V, 4-20 mA (through 250 $\Omega$ )
Voltage Rating	24 VDC
Module Current Rating	310 mA
Common Mode Rejection Ratio, dc to 60 Hz (500 $\Omega$ source imbalance)	70 dB
Common Mode Voltage, dc to 60 Hz	-6 to +5 V peak
Normal Mode Rejection Ratio, at 60 Hz	19 dB
Normal Mode Filter Response	Single-pole RC, -3 dB @ 6.5 Hz
Crosstalk, dc to 60 Hz (channel-to-channel)	-60 dB
Input Impedance (voltage inputs)	> 10 M $\Omega$ powered
Maximum Normal Mode Input (any input referenced to common, no damage)	$\pm$ 30 Volts

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Input Scan Rate	50 ms
Hardware Accuracy (@ CMV = 0 V)	$\pm 0.075\%$ of full-scale (23.5 $^{\circ}\pm 2^{\circ}\text{C}$ ) $\pm 0.15\%$ of full-scale (0 to 60 $^{\circ}\text{C}$ )
Module Removal and Insertion Under Power	Supported
Transmitter Field Power Conditioning	Individually Protected Current Limiting Circuits, No fuse required
Note 1 – 8C-PAIH54 supports voltage inputs for channels 1-16 when used with 8C-TAIDx1 IOTA. Each channel's 250-Ohm load resistor is connected to the input terminal through a wire jumper on the IOTA. This jumper should be cut by the user on channels to be used with voltage transmitters.	

#### 4.4.2. Analog Input with HART – Single Ended

##### Function

The Analog Input Module accepts high level current inputs from transmitters and sensing devices.

##### Notable Features

- Extensive self-diagnostics
- Optional redundancy
- HART-capable, multivariable devices
- Fast loop scan
- Internal or external field power selection
- On board excitation power (no need for marshalling power)
- Suitable for Configure / Status for HART Device
- Galvanic Isolation

##### Detailed Specification- Analog Input with HART (8C-PAIHA1)

Parameter	Specification
Input / Output Module	8C-PAIHA1 - Analog Input with HART (16), Coated
IOTA Modules	8C-TAIXA1      Non Redundant, Coated      6"
	8C-TAIXB1      Redundant, Coated      12"
Input Type	Current (2-wire or self-powered transmitters)
Input Channels	16 Channels (Single Ended type)
A/D Converter Resolution	16 bits
Input Range <sup>1</sup>	4-20 mA (through 250 $\Omega$ )
Voltage Rating	24 VDC
Module Current Rating	110 mA
Common Mode Rejection Ratio, dc to 60 Hz (500 $\Omega$ source imbalance)	70 dB
Common Mode Voltage, dc to 60 Hz	-6 to +5 V peak
Normal Mode Rejection Ratio, at 60 Hz	19 dB
Normal Mode Filter Response	Single-pole RC, -3 dB @ 6.5 Hz
Maximum Normal Mode Input	$\pm 30$ Volts
Crosstalk, dc to 60 Hz (channel-to-channel)	-60 dB
Maximum Input voltage (any input referenced to common, no damage)	$\pm 30$ Volts
Input Scan Rate	50 ms
Hardware Accuracy (@ CMV = 0 V)	$\pm 0.075\%$ of full-scale (23.5 $\pm$ 2 $^{\circ}$ C) $\pm 0.15\%$ of full-scale (0 to 60 $^{\circ}$ C)